

WHAT IS CLAIMED IS:

1. An orthogonal frequency division multiplexing (OFDM)

2 transmitter, comprising:

3 a training sequence generator configured to generate a
4 training sequence that includes a fractional tone in a guard band
5 thereof; and

6 OFDM transmission circuitry, coupled to said training sequence
7 generator, configured to transmit said training sequence via a
8 channel.

2. The transmitter as recited in Claim 1 wherein said

2 fractional tone is located in a center of said guard band.

3. The transmitter as recited in Claim 1 wherein said

2 fractional tone is attenuated at a decibel level selected from the
3 group consisting of:

4 at about twelve decibels from tones in a data band of said
5 training sequence; and

6 at about six decibels from tones in a data band of said
7 training sequence.

4. The transmitter as recited in Claim 1 wherein said

2 fractional tone is positive in sign.

5. The transmitter as recited in Claim 1 wherein said guard
2 band is free of excited tones other than said fractional tone.

6. An orthogonal frequency division multiplexing (OFDM)
2 receiver, comprising:

3 OFDM reception circuitry configured to receive, via a channel,
4 a training sequence that includes a fractional tone in a guard band
5 thereof; and

6 a channel estimator, coupled to said OFDM reception circuitry,
7 configured to employ said fractional tone to obtain a channel
8 response estimate.

7. The receiver as recited in Claim 6 wherein said
2 fractional tone is located in a center of said guard band and said
3 channel estimator interpolates remaining tones of said guard band.

8. The receiver as recited in Claim 6 wherein said
2 fractional tone is attenuated at a decibel level selected from the
3 group consisting of:

4 at about twelve decibels from tones in a data band of said
5 training sequence; and

6 at about six decibels from tones in a data band of said
7 training sequence.

9. The receiver as recited in Claim 6 wherein said guard
2 band is free of excited tones other than said fractional tone and
3 said channel estimator linearly interpolates remaining tones of
4 said guard band.

10. The receiver as recited in Claim 6 wherein said channel
2 estimator is further configured to interpolate a DC tone based on
3 adjacent tones of said training sequence.

11. A method of obtaining a channel response estimate for use
2 with an orthogonal frequency division multiplexing (OFDM)
3 communications system, comprising:

4 generating a fractional tone in a guard band of a training
5 sequence;

6 transmitting said training sequence via a channel; and

7 employing said fractional tone to obtain a channel response
8 estimate.

12. The method recited in Claim 11 wherein said fractional
2 tone is generated in a center of said guard band and said employing
3 includes interpolating remaining tones of said guard band.

13. The method recited in Claim 11 further comprising
2 attenuating said fractional tone at a decibel level selected from
3 the group consisting of:

4 at about twelve decibels from tones in a data band of said
5 training sequence; and

6 at about six decibels from tones in a data band of said
7 training sequence.

14. The method recited in Claim 11 wherein said generating
2 includes generating a fractional tone in a plurality of guard bands
3 of said training sequence.

15. The method recited in Claim 11 further comprising
2 interpolating a DC tone based on adjacent tones of said training
3 sequence.

16. An orthogonal frequency division multiplexing (OFDM)

2 communications system, comprising:

3 an OFDM transmitter that generates a training sequence that

4 includes a fractional tone in a guard band thereof and transmits

5 said training sequence via a channel; and

6 an OFDM receiver that receives said training sequence and

7 employs said fractional tone to obtain a channel response estimate.

17. The communications system as recited in Claim 16 wherein

2 said fractional tone is located in a center of said guard band and

3 said OFDM receiver interpolates remaining tones of said guard band.

18. The communications system as recited in Claim 16 wherein

2 said fractional tone is attenuated at a decibel level selected from

3 the group consisting of:

4 at about twelve decibels from tones in a data band of said

5 training sequence; and

6 at about six decibels from tones in a data band of said

7 training sequence.

19. The communications system as recited in Claim 16 wherein

2 said fractional tone is positive in sign.

20. The communications system as recited in Claim 16 wherein
2 said OFDM transmitter generates a fractional tone in a plurality of
3 guard bands and said OFDM receiver employs at least one of said
4 fractional tones to obtain said channel response estimate.

21. The communications system as recited in Claim 16 wherein
2 said OFDM receiver interpolates a DC tone based on adjacent tones
3 of said training sequence.